

CLAIMS

What is claimed is:

1. A method for the qualitative and for quantitative determination of genus, species, breed and/or geographical origin of biological materials on the basis of scales, hair, feathers, down and/or horn, comprising the following steps:
 - a) converting the scales, hair, feathers, down and/or horn or parts of them by means of specific chemical or bio-catalytic conversion into a pool of cleavage- peptides or derivatives of these cleavage peptides,
 - b) detecting the so-obtained cleavage- peptides or derivatives of these cleavage peptides individually or in groups by means of mass spectrometry,
 - c) comparing individual analysis signals or groups of signals, by comparing the signals with those of reference samples for determination of genus, species, breed and/or geographical origin of the material.
2. The method according to claim 1, wherein in step a) disulfide bonds cleaving reducing or oxidizing reagents are added.
3. The method according to claim 2, wherein the reagents contain one or more functional groups selected from the group consisting of the substance classes thiols, sulfides, sulfoxides, sulfones, sulfonamides, peroxides, metal catalysts, phosphines, phosphites, phosphates, halogenes, oxiranes, alkynes, olefines, amides, amines, carbon acids, carbon acid esters, alcohol, aldehydes and ketones.

4. The method according to claim 2, wherein in step a) chemical hydrolysing reagents for bio-polymers are used.
5. The method according to claim 1, wherein the conversion in step a) is performed with hydrolytic cleaving enzymes.
6. The method according to claim 1, wherein the hydrolytic cleaving enzymes are selected from the group consisting of trypsin, chymotrypsin, endoproteinase Glu-C (V8-Protease), endoproteinase Lys-C, endoproteinase Arg-C, endoproteinase Asp-N, thrombin, papain, pepsin, plasmin and mixtures of such enzymes.
7. The method according to claim 6, wherein one or more biological catalysts are used which are selected from the group consisting of bacteria, fungi, plant cells, animal cells, human cells or tissue and combinations thereof, enzymes, antibodies, proteins, ribo-enzymes, peptides.
8. The method according to claim 2, wherein the detection step for fragments so generated includes a mass-spectrometric ionisation method.
9. The method according to claim 8, wherein the detection step for detecting the fragments by mass-spectrometric ionisation means includes a method selected from the group consisting of atmospheric pressure chemical ionisation (APCI), chemical ionisation (CI), electron ionisation (EI), electrospray ionisation (ESI), fast atom bombardment (FAB), field desorption (FD), field ionisation (FI), laser induced liquid beam ionisation desorption (LILBID), liquid secondary ion mass spectrometry (LSIMS), matrix assisted laser desorption ionisation (MALDI), particle beam (PB), plasma desorption (PD), secondary ion mass spectrometry (SIMS), thermospray (TSP) or a combination of such ionisation methods is used as a specific detection system.

10. The method according to claim 2, wherein the generated fragments are separated and detected by liquid chromatography.
11. The method according to claim 10, wherein the liquid chromatography, is selected from the group consisting of liquid chromatography (LC), middle pressure liquid chromatography (MPLC) and high performance liquid chromatography (HPLC).
12. The method according to the claims 2, wherein the generated fragments are separated and afterwards detected by means of capillary electrophoretic methods.
13. The method according to the claims 2, further comprising the step of processing samples by means of a robot and/or by the use of mixing-heating and cooling devices.
14. The method according to claim 13, wherein the samples are transferred by one or multiple robots from one or more microtiter plates in one or more analytical devices.
15. The use of the method according to claim 1 for the identification of the origin of biological materials, especially of biological materials which contain structure forming proteins and their derivatives.